

CLAIMS

1. An electric press device having a substrate formed in a flat-plate state; a plurality of guide bodies each provided in such a manner that one end thereof is crossed with the substrate at a right angle;
a flat-plate state support body provided at the other ends of the guide bodies in a manner to cross with the guide bodies at a right angle;
a slide plate provided slidably between the substrate and the support body while being guided by the guide body;
a first motor for driving the slide plate slidably with respect to the guide bodies;
a ball screw shaft connected to an output shaft of the first motor and rotatably borne in parallel with the guide bodies with respect to the support body, and
a connecting mechanism provided with a nut member to be screwed with the ball screw shaft and a differential mechanism having an upper end fastened to the nut member and a lower end to the slide plate for slightly changing the contact position between the ball screw shaft as well as a thread groove within the nut member and the ball housed in the nut member, and
in the structure that the slide plate is vertically moved by normal and reverse rotations of the ball screw shaft driven by the first motor for performing fixed-point working on a work piece placed on the substrate, characterized in that
the differential mechanism of said connecting mechanism comprises:
a cylindrical nut-elevating sleeve having a helically advancing sliding groove provided on the outer circumferential face;
a nut elevating plate having an annular portion with a worm wheel tooth provided on the outer circumferential face and a guide engagement portion to be fitted in and slidably engaged with the sliding groove of the nut elevating sleeve provided on the inner circumferential face;
a worm meshed with the worm wheel tooth and capable of normal and reverse rotations;

a housing body with the bottom surface fastened to the slide plate for housing a nut elevating assembly rotatably bearing the worm and constituted by fitting the guide engagement portion of the nut elevating plate in the sliding groove of the nut elevating sleeve, for housing the nut elevating plate capable of rotational motion of the annular portion of the nut elevating plate in the form that the movement in the axial direction is constrained and for housing the nut elevating sleeve in the form that the nut elevating sleeve is slidable in the axial direction and constrained in its radial direction, and

a second motor for driving the worm capable of normal and reverse rotations.

2. The electric press device according to claim 1, wherein the guide engagement portion provided at said nut elevating plate has a substantially U-shaped section with upper and lower two flat surfaces and a perpendicular surface connecting the two flat surfaces, and

the sliding groove provided at said nut elevating sleeve is comprised by a substantially U-shaped groove corresponding to said upper and lower two flat surfaces and said perpendicular surface of the guide engagement portion provided at said nut elevating plate.